



BETTERBRICKS

# BUILDING COMMISSIONING

## for better public buildings

### CASE STUDY

#### HELENA MIDDLE SCHOOL OFFICIALS GET A REALITY CHECK

Helena School District officials in Helena, Montana, learned the hard way what can happen when expectations meet reality.

The District voters approved construction of the 64,000-square-foot East Valley Middle School in East Helena. Construction was completed in the fall of 1999, but from the beginning the building didn't operate as intended. The original warranty period expired without resolution. Problems with high-energy bills and staff comfort complaints reached the point of pending litigation between the school and the original installation contractors.

The solution for identifying the problems and the corrective actions needed to enhance occupant comfort and energy performance was to commission, or more accurately, retro-commission the newly built school. The scope of commissioning focused on evaluating the operation and performance of the HVAC systems in the building, principally the complex direct digital control (DDC) system, to make sure the building would work the way it was intended.

The specific commissioning goals were to identify mechanical equipment and control discrepancies for the respective contractors to repair or correct. This would resolve contractor responsibility and correct the indoor air quality, comfort, and high-energy use problems.

#### BUILDING COMMISSIONING

Is a systematic and documented process of ensuring that the owner's operational needs are met, building systems perform efficiently, and building operators are properly trained.



East Valley Middle School. Helena, Montana.

"Future building projects under my direction will surely have commissioning as part of the architectural contract, because the benefits outweigh the cost."

- Ron Whitmoyer,  
Superintendent of E. Helena Public Schools

#### COMMISSIONING QUICK FACTS

- Building: East Valley Middle School
- Location: East Helena, Montana
- Completion date: January 2002
- Scope of project: Retro-commissioning
- Commissioning cost: \$8,700<sup>1</sup>
- First-year cost benefit: \$6,138<sup>2</sup>
- Annual energy savings: \$15,236<sup>3</sup>

<sup>1</sup> Commissioning providers fee only.

<sup>2</sup> Cost reduction or avoidance.

<sup>3</sup> Annual energy savings based on cost of electricity of \$0.0494/kWh and natural gas of \$0.755 /therm.

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*This is one in a series of case studies on commissioning.  
To review other case studies go to [www.betterbricks.com/commissioning](http://www.betterbricks.com/commissioning).*



The newly commissioned rooftop HVAC unit.

Benefits of the commissioning include energy savings as well as improved comfort, fewer complaints, improved indoor air quality, avoidance of liability, and occupant and operator satisfaction. A few measures identified by the commissioning provider also resulted in quantifiable energy savings. The commissioning process itself was cost-effective based on the value of energy savings alone.

Now the Helena School District officials realize that commissioning the school before construction started could have avoided most of the problems and ensured that their expectations were met from the beginning. Future projects will likely include commissioning early on.

## LESSONS LEARNED

- Begin commissioning early on in the design phase to reduce potential problems.
- Owners should be involved in the commissioning process.
- Prioritize and correct identified issues based on energy savings and occupant complaints.
- Because today's HVAC systems are very complicated, commissioning is highly recommended.
- Commissioning provides the owner greater control over the project.

## COMMISSIONING BENEFITS

- Reduced energy costs.
- Increased occupant comfort and indoor air quality.
- Reduced operational deficiencies.
- Fewer occupant complaints.
- Reduced potential for legal recourse.

"As a result of commissioning, the original contractors have corrected the problems and we now enjoy a comfortable building with efficient heating, ventilation, and cooling systems."

- Ron Whitmoyer, Superintendent of  
E. Helena Public Schools

## PROJECT PARTNERS

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